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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/943,212      | 08/30/2001  | Masao Imai           | 14895               | 8893             |

23389 7590 05/20/2005

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EXAMINER

TRAN, TRANG U

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2614

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/943,212

Applicant(s)

IMAI, MASAO

Examiner

Trang U. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5,13,14,17,18,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) 2-4,6-12,15,16 and 19-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,13,14,17,18,27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1, 5, 13-14, 17-18 and 27-28 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5, 13-14 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin (US Patent no. 5,784,038) in view of Arai Naohisa et al (JP Publication No. 08-101672).

In considering claim 1, Irwin discloses all the claimed subject matter, note 1) the claimed illuminating a display device having a matrix of pixels, with adjacent four pixels as a unit, with illuminating lights including a red illuminating light, a green illuminating light, a blue illuminating light, and an achromatic illuminating light is met by active matrix color LCD 10 which has pixel 12, in the display area 14, to be comprised of 4 subpixels 11, 13, 15, 17 and three subpixels 11, 13, 17 are coated with colored RGB (Figs. 1a-1c, col. 1, lines 19-48), 2) the claimed generating a red video signal, a green video signal, a blue video signal, and an achromatic video signal from a color video signal so as to correspond to the colors of the illuminating lights applied to the pixels in each unit is met

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by the display controller 52 and the color wheel 40 (Fig. 3, col. 4, lines 20-43), and 3) the claimed energizing said display device with the generated video signals to display a color video picture thereon is met by the projection lenses 34 and 36, for projecting onto a display screen 32, color images optically transmitted to the projection lenses 34 and 36, by the backlighted monochrome active matrix LCD 46 through the color wheel assembly and display on the screen 32 (Fig. 3, col. 4, lines 20-43).

However, Irwin explicitly does not disclose the claimed a display device having a matrix of pixels, such that the illuminating lights applied to the pixels in each unit have different colors from each other and the colors of the illuminating lights are switched in each field period an achromatic illuminating light.

Arai Naohisa et al teach that the step by which a correction three-primary-colors signal is generated based on the detected achromatic color signal, the step by which the 4X time-division-multiplexing signal of an achromatic color signal and a correction three-primary-colors signal is generated, it is the Junji Men drive approach of the color display equipment characterized by consisting of a step which drives the color shutter allotted to a monochrome image display means by which the fields is switched based on a Time-Division-Multiplexing signal and an optic-axis top serial (Figs. 1 and 4, page 4, [0014] to page 5, [0028]).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the field switched illuminating light as taught by Arai Naohisa et al into Irwin's system in order to prevent color split in a field sequential color display.

Claim 5 is rejected for the same reason as discussed in claim 1.

In considering claim 13, Irwin discloses all the claimed subject matter, note 1) the claimed a display device having a matrix of pixels and a condensing lens disposed on a surface thereof for applying illuminating light in association with every four pixels of said matrix is met by active matrix color LCD 10 which has pixel 12, in the display area 14, to be comprised of 4 subpixels 11, 13, 15, 17 and three subpixels 11, 13, 17 are coated with colored RGB and the lens 36, 34 (Figs. 1a-1c and 3, col. 1, lines 19-48 and col. 4, lines 20-43), 2) the claimed color switching illumination means for applying illuminating lights including a red illuminating light, a green illuminating light, a blue illuminating light, and an achromatic illuminating light at different angles to said condensing lens, such that, with adjacent four pixels as a unit, the illuminating lights applied to the pixels in each unit have different colors from each other is met by the display controller 52 and the color wheel 40 (Fig. 3, col. 4, lines 20-43), and 3) the claimed video signal processing means for generating a red video signal, a green video signal, a blue video signal, and an achromatic video signal from a color video signal so as to correspond to the colors of the illuminating lights applied to the pixels in each unit, and energizing said display device with the generated video signals to display a color video picture thereon is met by the projection lenses 34 and 36, for projecting onto a display screen 32, color images optically transmitted to the projection lenses 34 and 36, by the backlighted monochrome active matrix LCD 46 through the color wheel assembly and display on the screen 32 (Fig. 3, col. 4, lines 20-43).

However, Irwin explicitly does not disclose the claimed switching the colors the illuminating lights in each field period, such that, with adjacent four pixels as a unit, the illuminating lights applied to the pixels in each unit have different colors from each other, and switching the colors of the illuminating lights in each field period.

Arai Naohisa et al teach that the step by which a correction three-primary-colors signal is generated based on the detected achromatic color signal, the step by which the 4X time-division-multiplexing signal of an achromatic color signal and a correction three-primary-colors signal is generated, it is the Junji Men drive approach of the color display equipment characterized by consisting of a step which drives the color shutter allotted to a monochrome image display means by which the fields is switched based on a Time-Division-Multiplexing signal and an optic-axis top serial (Figs. 1 and 4, page 4, [0014] to page 5, [0028]).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the field switched illuminating light as taught by Arai Naohisa et al into Irwin's system in order to prevent color split in a field sequential color display.

In considering claim 14, the claimed further comprising the step of: projecting means for projecting the color video picture displayed on said display device is met by the projection lenses 34 and 36, for projecting onto a display screen 32, color images optically transmitted to the projection lenses 34 and 36, by the backlighted monochrome active matrix LCD 46 through the color wheel assembly and display on the screen 32 (Fig. 3, col. 4, lines 20-43 of Irwin).

In considering claim 27, Irwin discloses all the claimed subject matter, note 1) the claimed wherein the pixels in each unit are arranged in a square matrix is met by active matrix color LCD 10 which has pixel 12, in the display area 14, to be comprised of 4 subpixels 11, 13, 15, 17 and three subpixels 11, 13, 17 are coated with colored RGB (Figs. 1a-1c, col. 1, lines 19-48). However, the combination of Irwin and Arai Naohisa et al explicitly do not disclose the claimed wherein the pixels in each unit are arranged in a square matrix with green and achromatic pixels positioned diagonally opposite in relation to each other. It would have been obvious to one ordinary skill in the art at the time of the invention to incorporate a square matrix with green and achromatic pixels positioned diagonally opposite in relation to each other into the combination of Irwin and Arai Naohisa et al's since it merely selecting available subpixels.

Claim 28 is rejected for the same reason as discussed in claim 27.

4. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin (US Patent no. 5,784,038) in view of Arai Naohisa et al (JP Publication No. 08-101672), and further in view of Takeuchi et al. (US Patent No. 6,621,488 B1).

In considering claim 17, the combination of Irwin and and Arai Naohisa et al disclose all the limitations of the instant invention as discussed in claim 13 above, except for providing the claimed wherein said color switching illumination means has a collimator lens associated with four sets of four regions for emitting said red illuminating light, said green illuminating light, said blue illuminating light, and said achromatic illuminating light, respectively, said color switching illumination means being arranged to energize either one at a time of said four regions to emit the illuminating light in each

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field period, said regions being arranged in a matrix. Takeuchi et al teach that the illumination device 20 has three light sources 22R, 22G, and 22B; two dichroic mirrors 24 and 26, and a collimating lens 28, the three light sources 22R, 22G, and 22B are selectively switched on one at a time, each emitting illumination light of one of three colors (RGB) (Fig. 1, col. 3, lines 20-51). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the collimating lens as taught by Takeuchi et al into the combination of Irwin and and Arai Naohisa et al's system in order to make the illumination light incident on the liquid-crystal panel more sufficiently parallel.

Claim 18 is rejected for the same reason as discussed in claim 17.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (571) 272-7358. The examiner can normally be reached on 8:00 AM - 5:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TT  
May 12, 2005

  
TRAN TRAN  
PATENT EXAMINER